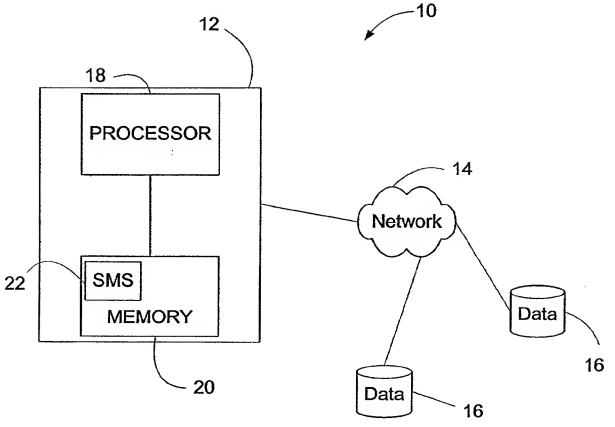


FIG. 1

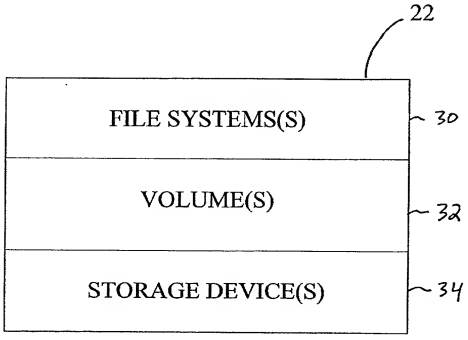


FIG. 2

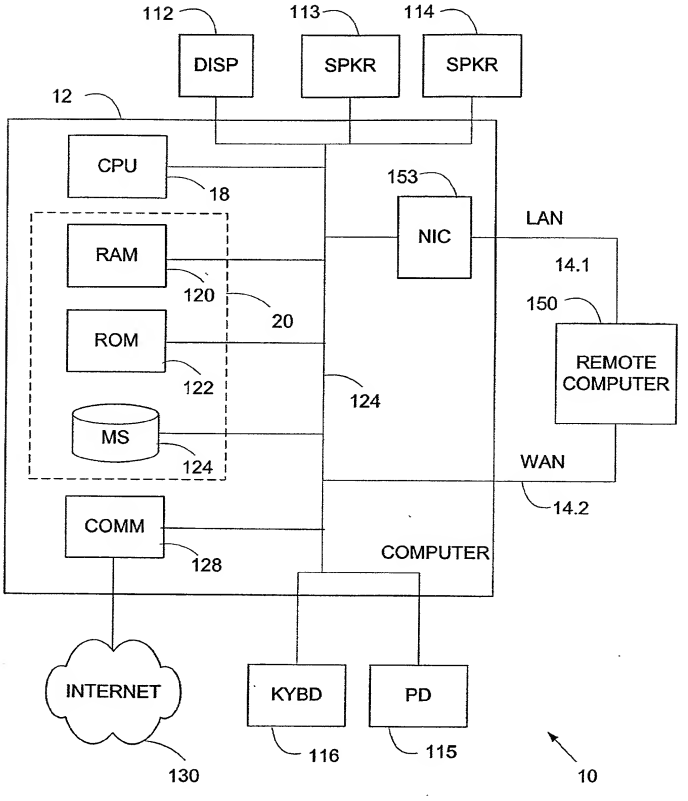

112
113
114
DISP
SPKR
SPKR
12
CPU
18
153
NIC
LAN
14.1
RAM
120
20
150
ROM
122
REMOTE COMPUTER
124
MS
124
WAN
14.2
COMM
128
COMPUTER
INTERNET
KYBD
PD
116
115
130
10

Fig. 3

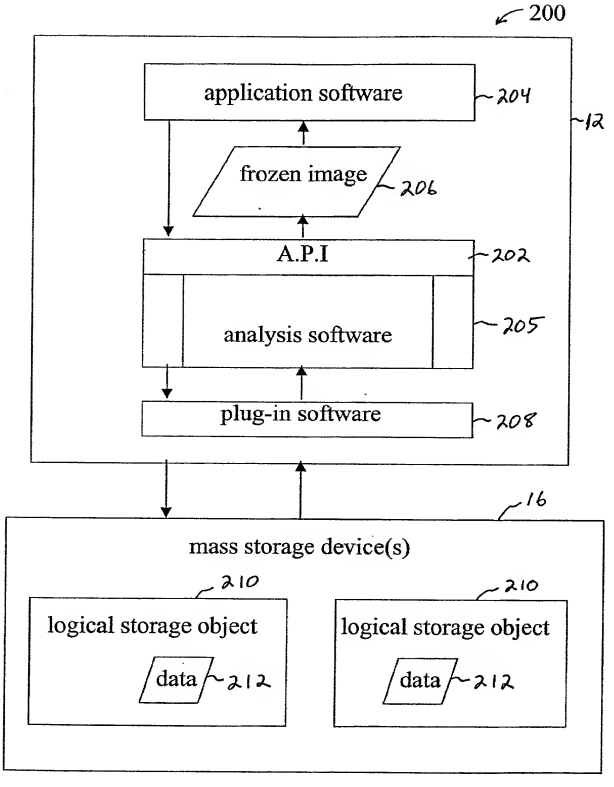

200
application software
204
12
frozen image
206
A.P.I
202
analysis software
205
plug-in software
208
16
mass storage device(s)
210
logical storage object
data
212
210
logical storage object
data
212

FIG. 4

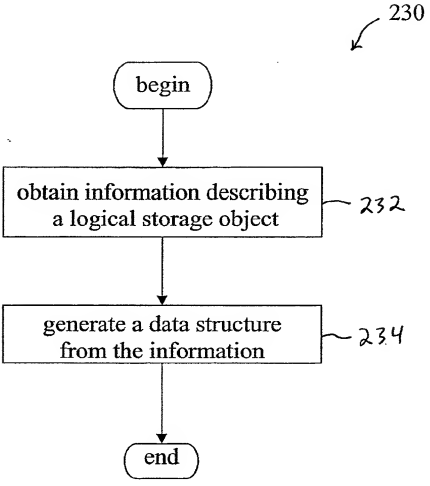

230
begin
obtain information describing a logical storage object
232
generate a data structure from the information
234
end

FIG. 5

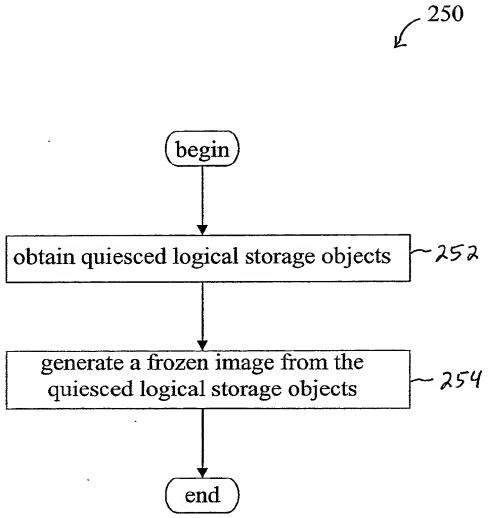

250
begin
obtain quiesced logical storage objects
252
generate a frozen image from the quiesced logical storage objects
254
end

FIG. 6

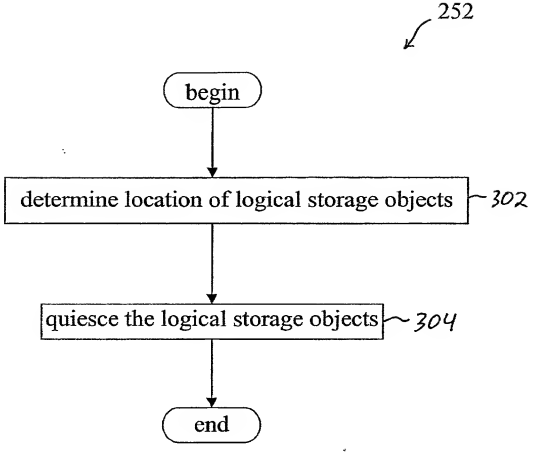

252
begin
determine location of logical storage objects
302
quiesce the logical storage objects
304
end

FIG. 7

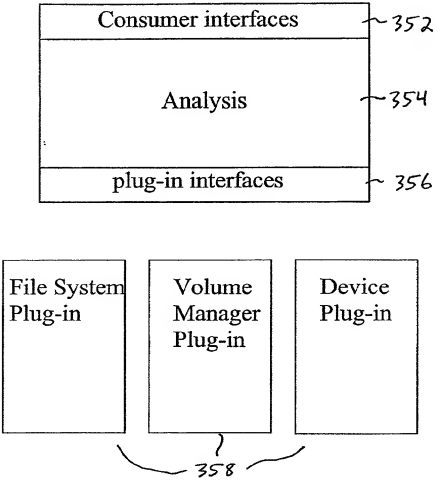
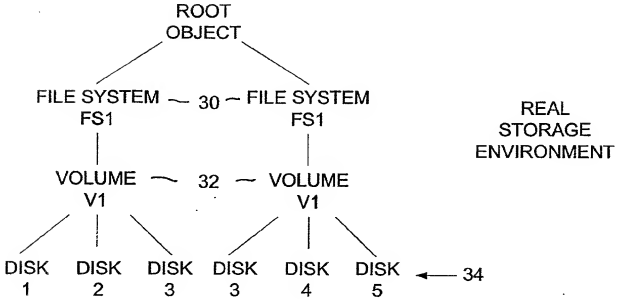

Consumer interfaces
352
Analysis
354
plug-in interfaces
356
File System Plug-in
Volume Manager Plug-in
Device Plug-in
358
350

FIG. 8


ROOT
OBJECT
FILE SYSTEM
FS1
30
FILE SYSTEM
FS1
REAL
STORAGE
ENVIRONMENT
VOLUME
V1
32
VOLUME
V1
DISK
1
DISK
2
DISK
3
DISK
3
DISK
4
DISK
5
34

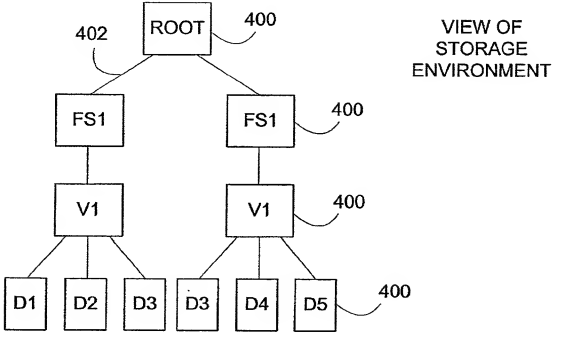

402
ROOT
400
VIEW OF
STORAGE
ENVIRONMENT
FS1
FS1
400
V1
V1
400
D1
D2
D3
D3
D4
D5
400

FIG. 9

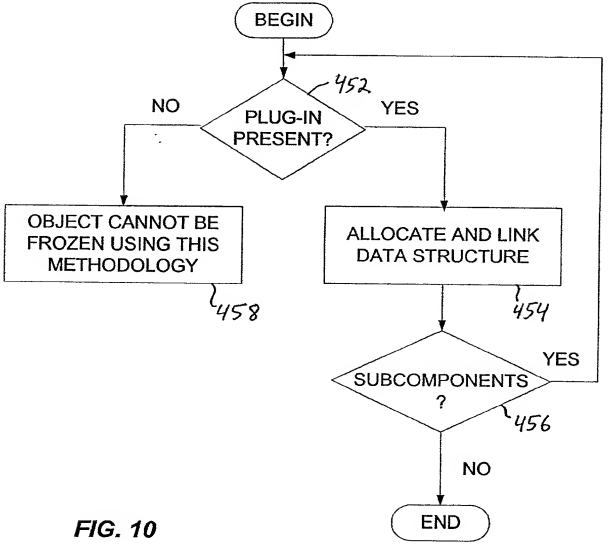

BEGIN
452
NO
PLUG-IN PRESENT?
YES
OBJECT CANNOT BE FROZEN USING THIS METHODOLOGY
458
ALLOCATE AND LINK DATA STRUCTURE
454
YES
SUBCOMPONENTS ?
456
NO
END

FIG. 10

20220135930A1

470

4	atomic multi-file-system
3	serial file-system
2	atomic device level
1	serial device level
0	none

FIG. 11

20020-0999001

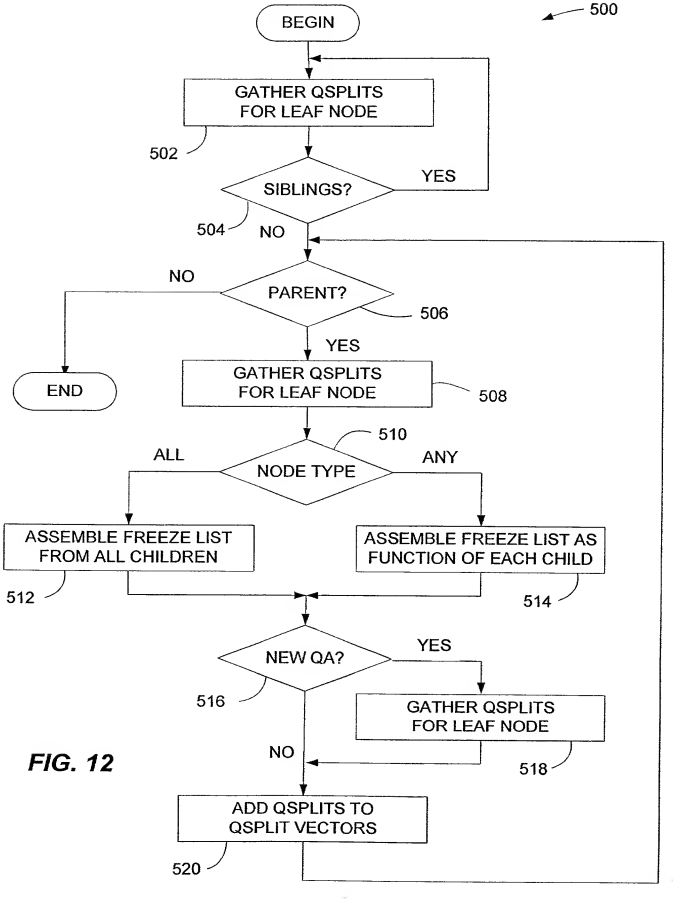


FIG. 12

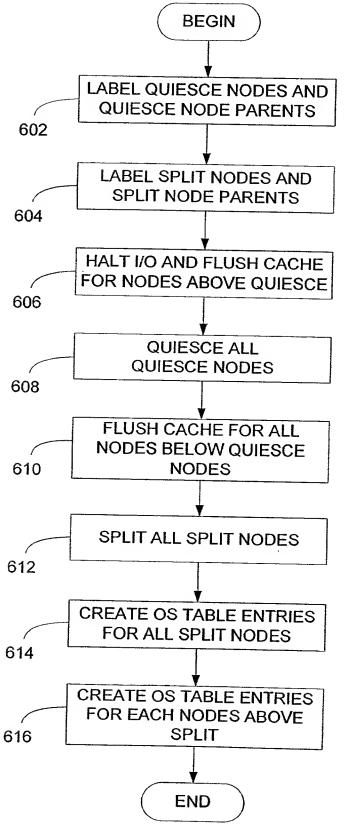

BEGIN
600
LABEL QUIESCE NODES AND QUIESCE NODE PARENTS
602
LABEL SPLIT NODES AND SPLIT NODE PARENTS
604
HALT I/O AND FLUSH CACHE FOR NODES ABOVE QUIESCE
606
QUIESCE ALL QUIESCE NODES
608
FLUSH CACHE FOR ALL NODES BELOW QUIESCE NODES
610
SPLIT ALL SPLIT NODES
612
CREATE OS TABLE ENTRIES FOR ALL SPLIT NODES
614
CREATE OS TABLE ENTRIES FOR EACH NODES ABOVE SPLIT
616
END

FIG. 13

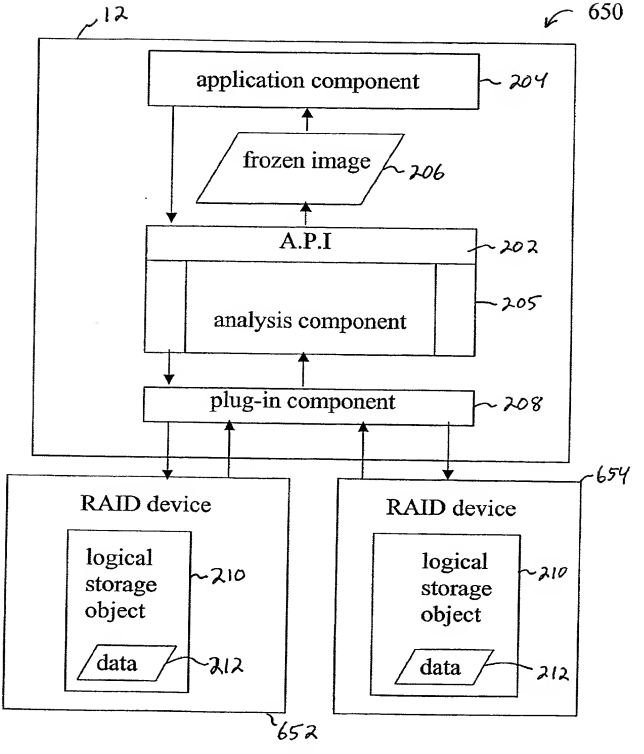

12
650
application component
204
frozen image
206
A.P.I
202
analysis component
205
plug-in component
208
654
RAID device
logical storage object
210
data
212
652
RAID device
logical storage object
210
data
212

FIG. 14